

Influence of Governmental Fragmentation in Adoption of Sustainable Policies and Innovation in Urban Water Management

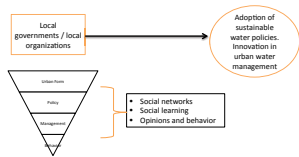
Liliana Gómez Fernández, Adam Henry, and Gary Pivo

lgomezfernandez@email.arizona.edu adhenry@email.arizona.edu gpivo@email.arizona.edu

Introduction

- We measure the influence of governmental fragmentation in adoption of sustainable policies in water and innovation in its management.
- Water management involves different actors and uses. Thus, changes in their practices are institutional collective action (ICA) dilemmas. (Feiock, 2013).

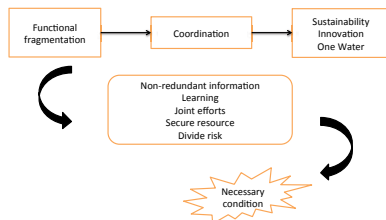
C1-1: Understanding of Sustainable Urban Water Solutions



- Fragmentation refers to situations in which policy actors carry out their governance functions independently of one another in a same policy domain.** Fragmentation arises from delegation of authority (Feiock, 2004).
- We explore functional fragmentation that arises from the connectedness of organizations via the functions they are mandate to perform.

Objectives

- Determine the influence of governmental fragmentation in the adoption of sustainable policies and innovation in management.
- Measurement of functional fragmentation.



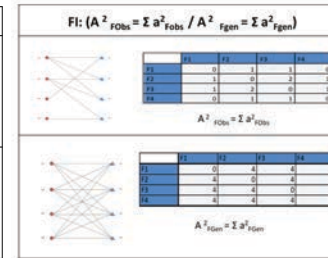
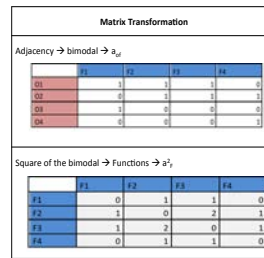
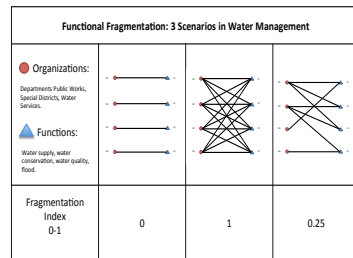
Methods

Network Analysis

- Focus on nodes, entities, and their links.
- Relevance establishment and changes in the relationships.
- Focus on behavior in network.

Network analysis in water management

- How to link knowledge with action?
- How to enhance collective action?
- How to promote social learning? (Henry & Vollan, 2014)



Data Collection

Datasets	
2 Datasets for each region	Local Governments
Sources	<ul style="list-style-type: none"> US Census of governments (2012) Municipal, County, Special District. Activities related to water.
Type of information	<ul style="list-style-type: none"> Spending Type of activities Contact information <ul style="list-style-type: none"> Address Phone Email
Code	<ul style="list-style-type: none"> 7 account expenses 1 -> spend 0 -> not

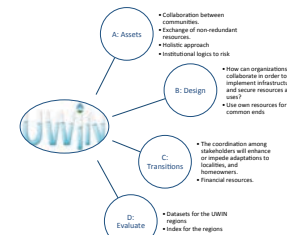
State	Metropolitan Area ¹	Number of Observations
Florida	Fort Lauderdale	60
	Miami	46
Arizona	Phoenix	58
	Tucson	33
Maryland	Baltimore	53

¹MSA defined by the Office of Management and Budget. For the regional cases we will include a regional scope.
* This will be applied to Oregon, Washington and Colorado.

Results

- Adjacency matrix
- Bimodal matrix
- Calculations
- Functions
- Generate scenario and repeat 1-4
- Calculate index

MSA	Fragmentation Index
Miami	0.11
Fort Lauderdale	0.17
Tucson	0.18
Baltimore	0.21
Phoenix	0.23



We ran the calculations in R, using the package SNA and the HRU utilities.

Conclusions

Theoretical

- Characterization of functional fragmentation as a necessary condition to sustainability and innovation.
- Variety of contexts.
- Add to understanding of how structures influence management.
- Hypotheses.

Methodological

- Systematic search.
- Use of bimodal matrixes in network analysis.
- Creation of indicator.

Further research

- Complete datasets for other regions.
- Design surveys and interviews in order to understand processes.
- Learning, modularity, dissemination.
- Test hypotheses about processes that generate the network.
- Apply QAP and ERGM

Acknowledgements



This work was funded by NSF Sustainability Research Networks (SRN) Cooperative Agreement 1444758

References

Feiock, R. C. (2004). Politics, institutions and local land-use regulation. *Urban Studies*, 41(2), 363-375.
 Feiock, R. C. (2013). The institutional collective action framework. *Policy Studies Journal*, 41(3), 397-425.
 Henry, A. D., & Vollan, B. (2014). Networks and the challenge of sustainable development. *Annual Review of Environment and Resources*, 39, 583-610.